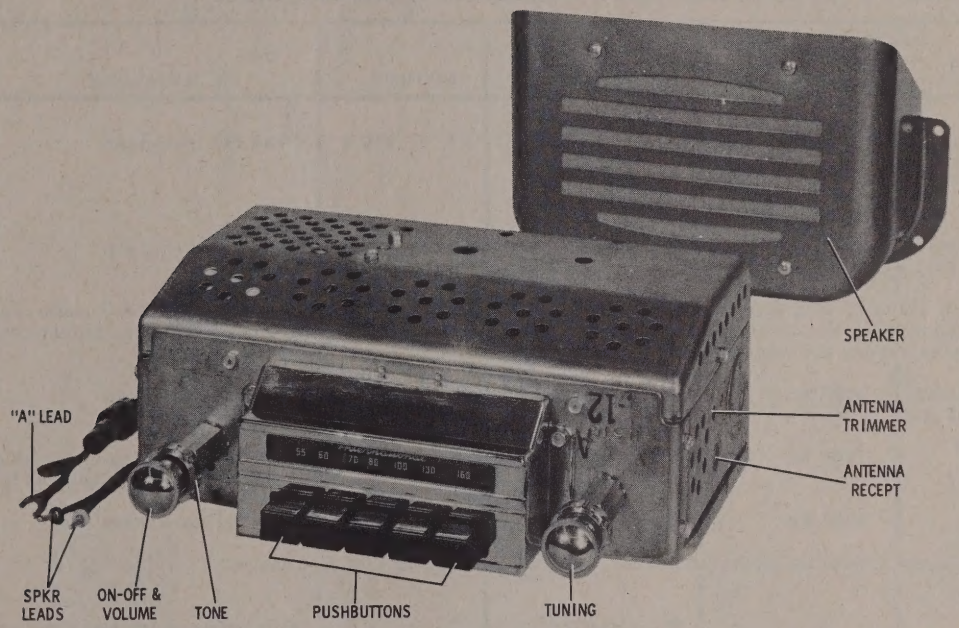
MOTOROLA Service Manual

AUTO RADIO

MODELS
IL5TCA
IL5TCA-12



GENERAL INFORMATION

TYPE - Automotive type superheterodyne receiver designed for installation in the 1955 International R line trucks. Model IL5TCA is for trucks with a 6-volt electrical system; model IL5TCA-12 is for trucks with a 12-volt electrical system.

TUNING RANGE - 540 to 1600 Kc IF - 455 Kc

OPERATES FROM - 6 volt storage battery (IL5TCA)
12 volt storage battery (IL5TCA-12)

TUBE COMPLEMENT - IL5TCA: 6BA6 RF amp; 6BE6 conv; 6BA6 IF amp; 6CR6 Det-AVC-AF amp; 6AQ5 pwr amp; 6X4 rect.

IL5TCA-12: 12BA6 RF amp; 12BE6 conv; 12BA6 IF amp; 12CR6 Det-AVC-AF amp; 12AQ5 pwr amp; 12X4 rect.

TO SET PUSHBUTTONS

Stations may be set up in any order. However, for convenience in remembering, it is suggested that stations be set up in frequency sequence, from left to right.

1. Turn receiver on and allow to operate for fifteen minutes. Antenna should be fully extended.
2. Unlock one of the pushbuttons by pulling it out.
3. Accurately tune in a station with the manual tuning.
4. Lock pushbutton to that station by pushing in firmly.
5. Repeat above procedure for remaining pushbuttons.

MOTOROLA AUTO RADIO WARRANTY SERVICE STATION PROCEDURE FOR INTERNATIONAL R LINE RADIO MODELS

1. Defective in-warranty radio must be accompanied with the Customer's Warranty Policy covering International Auto Radio Models. This tag must be properly filled in by the International Dealer at the time of radio purchase. Accept as warranty repairs only those radios within the ninety-day warranty period.
2. Fill in Motorola Auto Radio Warranty Labor Claim, Part No. 54P480884, and mail White and Green copies to: Service Department, Motorola Incorporated, 4545 W. Augusta Boulevard, Chicago 51, Illinois.
3. The Yellow copy of the Motorola Auto Radio Warranty Labor Claim is to be retained by the Warranty Service Station for his files.
4. Defective parts for warranty repairs made on International Models are to be sent to your Motorola Distributor for free replacement, supported with the defective parts return tag or form which you are now using.
5. Only those service shops authorized by their Motorola Distributor can perform repairs within the warranty period on a no-charge basis to the customer. If you are not already authorized as a Motorola Auto Radio Warranty Service Station, and you are interested in handling this service, please contact your Motorola Distributor for complete details.

MOTOROLA INC. 4545 WEST AUGUSTA BLVD. · CHICAGO 51, ILLINOIS

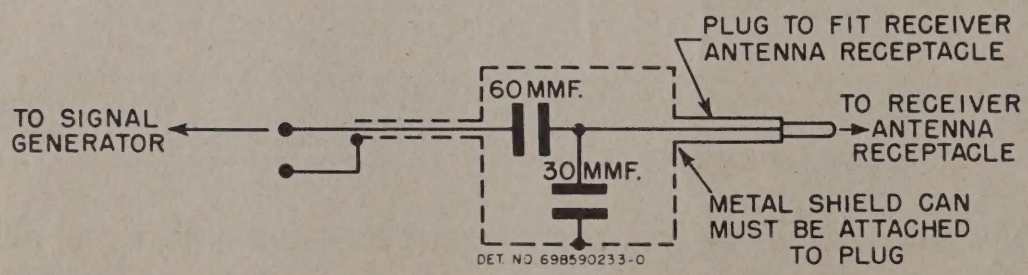
Part No. 68P537396 Price 10 cents Printed in U.S.A.

ALIGNMENT

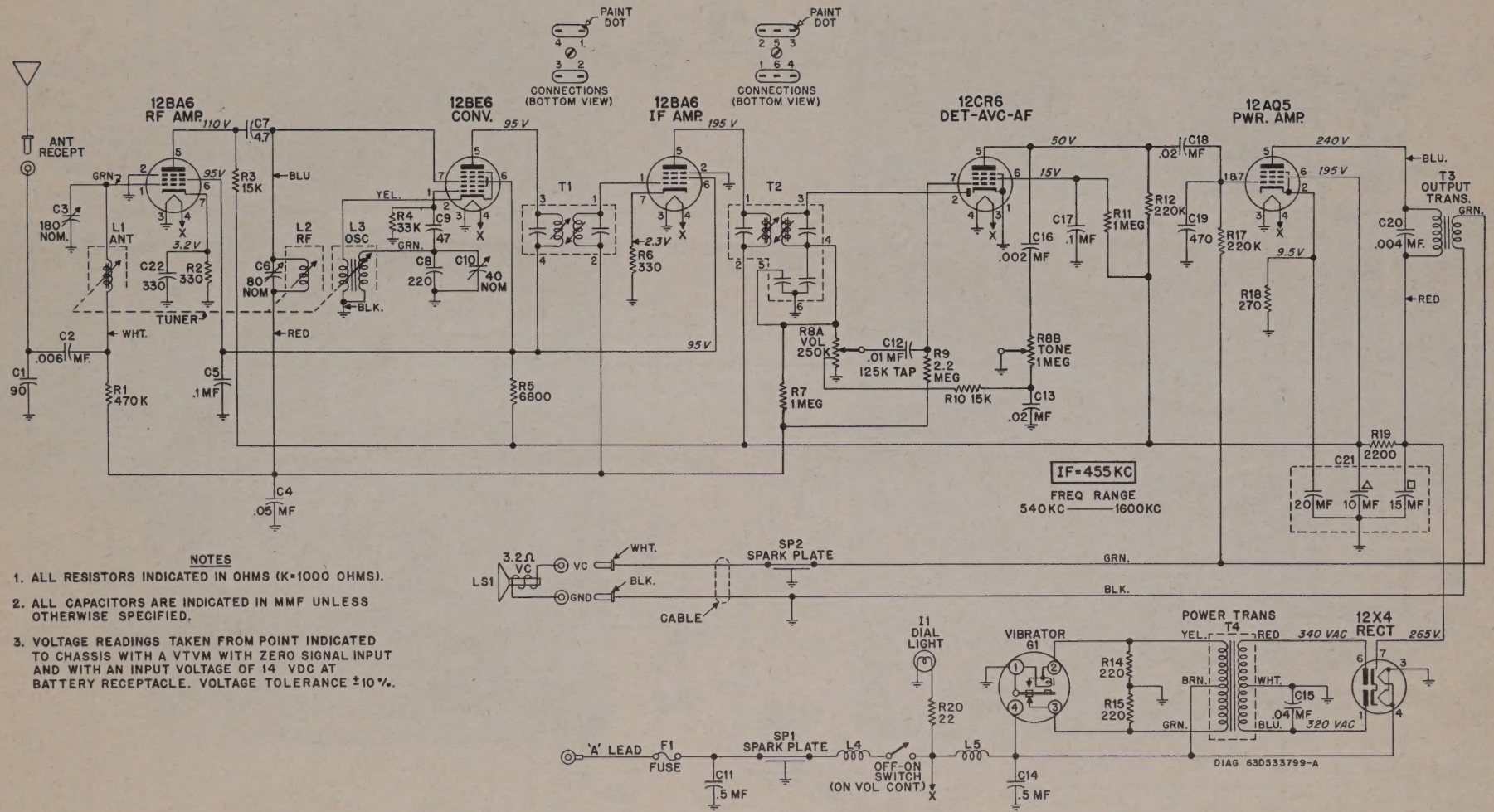
Connect an output meter across the speaker voice coil. Set tone control to high and volume to maximum. Attenuate signal generator output to maintain 1.79 volts on output meter to prevent overloading the receiver.

STEP	GENERATOR CONNECTION	GENERATOR FREQUENCY (400 cycle mod)	TUNER SET TO	ADJUST	REMARKS
IF ALIGNMENT					
1.	Conv grid (pin 7) thru .1 mf & chassis	455 Kc	Hi end stop	1, 2, 3 & 4	Peak for maximum
RF ALIGNMENT					
2.	Ant recept thru dummy (see Fig.)	1605 Kc	Hi end stop	5, 6 & 7	Peak for maximum
NOTE: Do not perform steps 3, 4, 5 & 6 unless the tuner has been tampered with or components have been replaced. Before proceeding with step 3, back tuning cores 1" out of coils to eliminate their effect on trimmer adjustments. Remove the escutcheon to expose the tuning cores.					
3.	Ant recept thru dummy (see Fig.)	1605 Kc	Hi end stop	5, 6 & 7	Peak for maximum
4.	"	1300 Kc	5/16" from hi end stop	8, 9, 10	Peak for maximum using alignment tool, Motorola Part No. 66A76278.
5.	"	1605 Kc	Hi end stop	5, 6 & 7	Peak for maximum
6.	Repeat steps 4 and 5 until no further increase, then cement tuning cores in place.				
ANTENNA TRIMMER					
7.	-	-	Weak station around 1400 Kc	7	With radio installed in car and antenna fully extended, peak antenna trimmer for maximum.
POINTER CALIBRATION					

Tune receiver to a 1300 Kc signal and rotate the pointer adjusting cam until the pointer reads 1300 Kc on the dial scale.


PLUG TO FIT RECEIVER ANTENNA RECEPTACLE
60 MMF.
TO SIGNAL GENERATOR
TO RECEIVER ANTENNA RECEPTACLE
30 MMF.
METAL SHIELD CAN MUST BE ATTACHED TO PLUG
DET. NO 698590233-0

DUMMY ANTENNA



NOTES

1. ALL RESISTORS INDICATED IN OHMS (K=1000 OHMS).
2. ALL CAPACITORS ARE INDICATED IN MMF UNLESS OTHERWISE SPECIFIED.
3. VOLTAGE READINGS TAKEN FROM POINT INDICATED TO CHASSIS WITH A VTVM WITH ZERO SIGNAL INPUT AND WITH AN INPUT VOLTAGE OF 14 VDC AT BATTERY RECEPTACLE. VOLTAGE TOLERANCE ±10%.

ALIGNMENT

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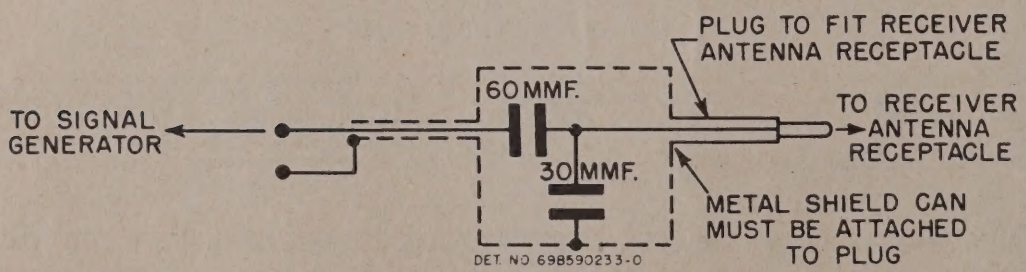
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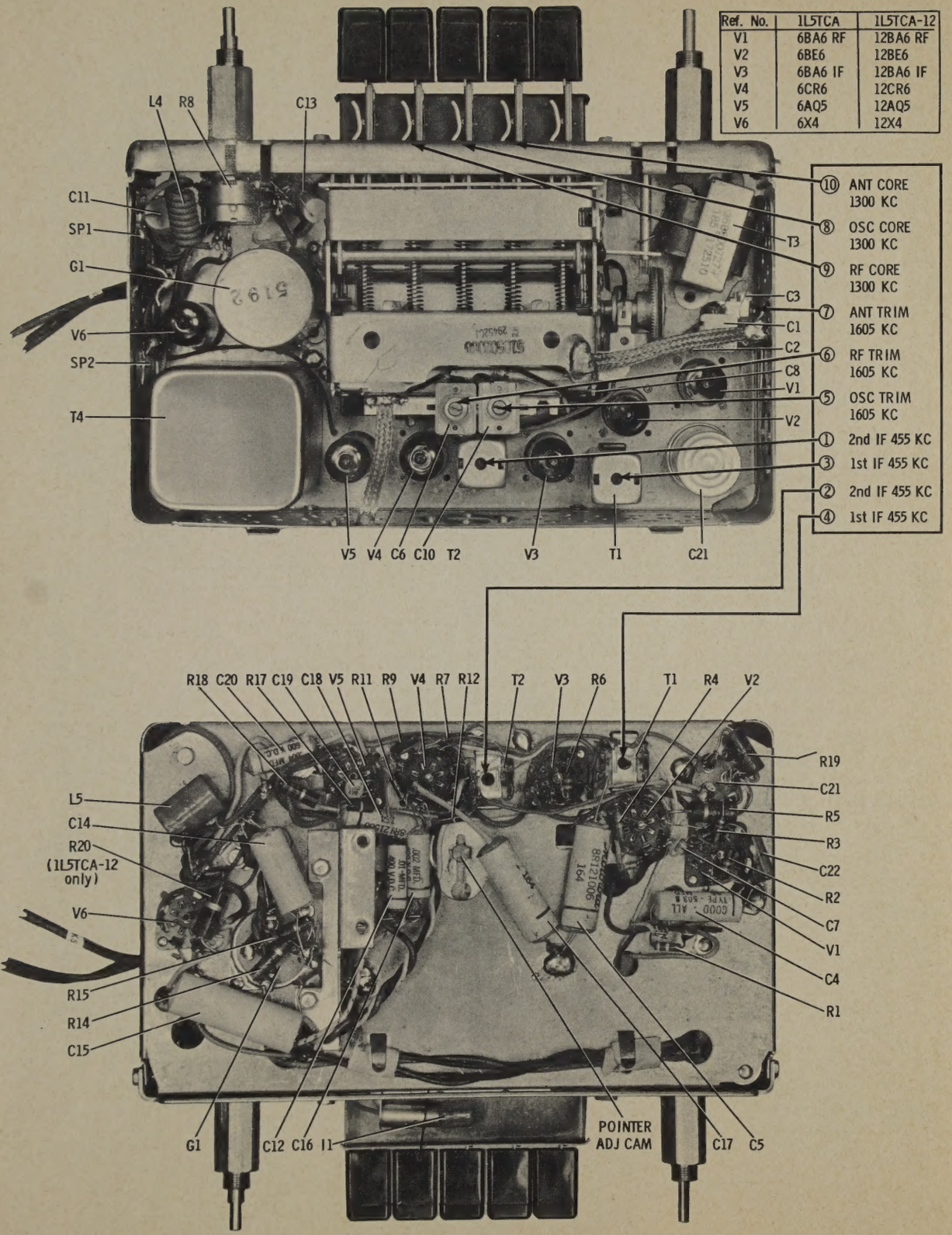
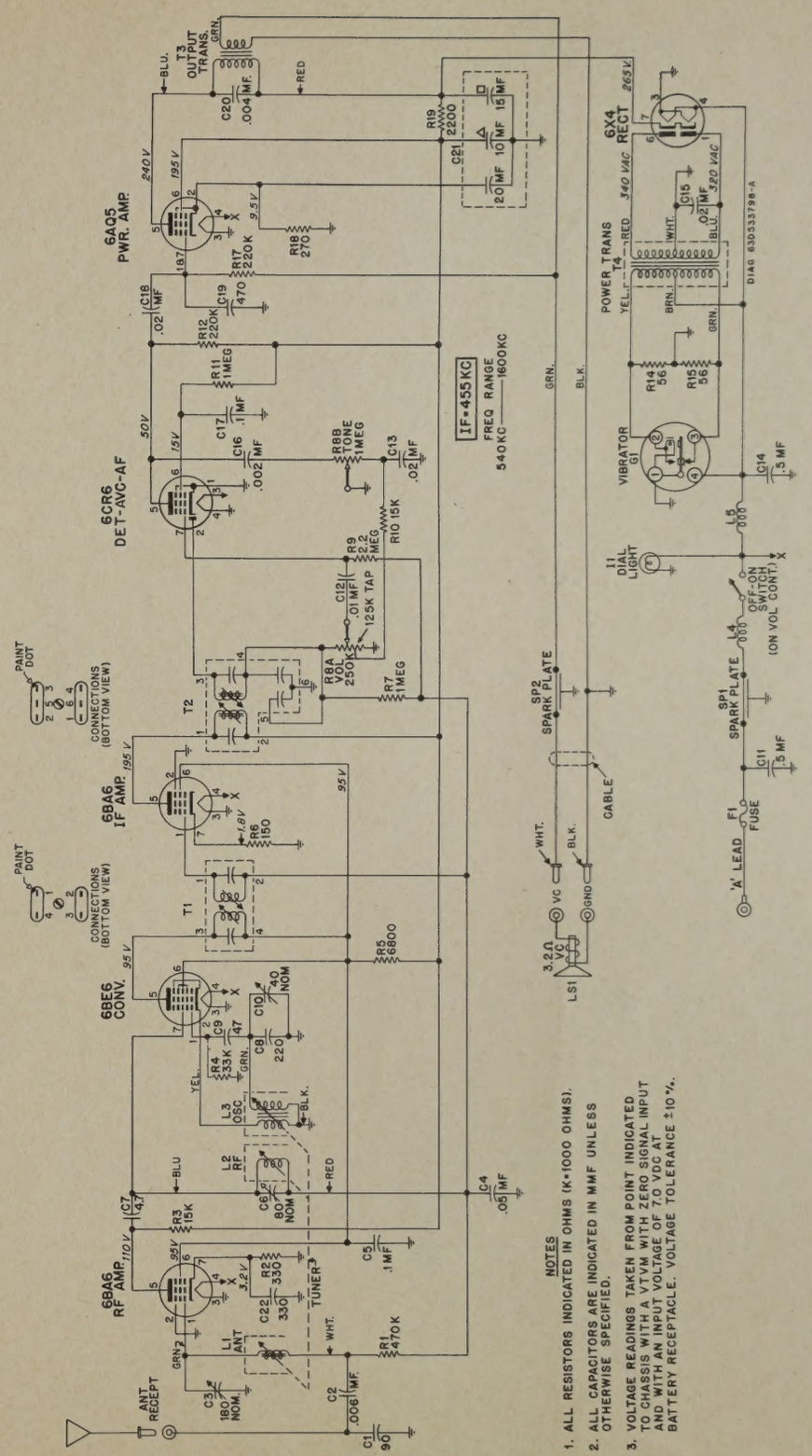
DUMMY ANTENNA

Ref. No.	1L5TCA	1L5TCA-12
V1	6BA6 RF	12BA6 RF
V2	6BE6	12BE6
V3	6BA6 IF	12BA6 IF
V4	6CR6	12CR6
V5	6AQ5	12AQ5
V6	6X4	12X4



ALIGNMENT ADJUSTMENT & PARTS LOCATIONS


T3 OUTPUT TRANS.
6AQ5 PWR. AMP.
6CR6 DET-AVC-AF
6BA6 IF AMP.
6BE6 CONV.
6BA6 RF AMP.
6X4 RECT
POWER TRANS T4
VIBRATOR G1
I1 DIAL LIGHT
SP1 SPARK PLATE
SP2 SPARK PLATE
OFF-ON SWITCH (ON VOL CONT)
IF=455 KC
FREQ RANGE 540 KC — 1600 KC
CONNECTIONS (BOTTOM VIEW)
ANT RECEPT
'A' LEAD
F1 FUSE
CABLE
LS1
TUNER
NOTES
1. ALL RESISTORS INDICATED IN OHMS (K=1000 OHMS).
2. ALL CAPACITORS ARE INDICATED IN MMF UNLESS OTHERWISE SPECIFIED.
3. VOLTAGE READINGS TAKEN FROM POINT INDICATED TO CHASSIS WITH A VTVM WITH ZERO SIGNAL INPUT AND WITH AN INPUT VOLTAGE OF 7.0 VDC AT BATTERY RECEPTACLE. VOLTAGE TOLERANCE ±10%.

SCHEMATIC DIAGRAM MODEL IL5TCA

REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Part Number	Description	List Price
ELECTRICAL PARTS			
C-1	21A591682	Capacitor, metal mica: 90 mmf 500V	.20
C-2	8R121001	Capacitor, paper tub: .006 mf 400V	.30
C-3	20A501419	Capacitor, mica trim: 50 to 280 mmf	.35
C-4	8R121005	Capacitor, paper tub: .05 mf 200V	.25
C-5	8R121006	Capacitor, paper tub: .1 mf 400V	.25
C-6	-	Capacitor, mica trim (See AT-90 Tuner Service Manual)	-
C-7	21R115955	Capacitor, mld: 4.7 mmf 500V	.25
C-8	-	Capacitor, ceramic TC (See AT-90 Tuner Service Manual)	-
C-9	21R115890	Capacitor, cer tub: 47 mmf 500V	.25
C-10	-	Capacitor, mica trim (See AT-90 Tuner Service Manual)	-
C-11	8K122076	Capacitor, paper tub: .5 mf 100V	.50
C-12	8R121002	Capacitor, paper tub: .01 mf 400V	.25
C-13	8R121003	Capacitor, paper tub: .02 mf 200V	.25
C-14	8K122076	Capacitor, paper tub: .5 mf 100V	.50
C-15	8R121004	Capacitor, paper tub: .02 mf 1000V (1L5TCA)	.35
	8A121549	Capacitor, paper tub: .04 mf 1000V (1L5TCA-12)	.35
C-16	8R121568	Capacitor, paper tub: .002 mf 600V	.30
C-17	8R121006	Capacitor, paper tub: .1 mf 400V	.25
C-18	8R121566	Capacitor, paper tub: .02 mf 400V	.25
C-19	21R115856	Capacitor, mica: 470 mmf 500V	.25
C-20	8R121000	Capacitor, paper tub: .004 mf 600V	.35
C-21	23A485677	Capacitor, electrolytic: 15-10mf/350V 20mf/25V	2.50
C-22	21R2744	Capacitor, mica: 330 mmf 500V	.25
F-1	65R12894	Fuse: 14 amp (1L5TCA)	.05
	65R16248	Fuse: 9 amp (1L5TCA-12)	.05
G-1	48B3333	Vibrator, 6 volt (1L5TCA)	3.80
	48B522000	Vibrator, 12 volt (1L5TCA-12)	4.70
I-1	65X10867	Bulb: 6.3V .25A; #44	.20
L-1,2, 3	-	See AT-90 Tuner Service Manual	-
L-4	24K592269	Choke, RF	.10
L-5	24A472535	Choke, hash (1L5TCA)	.40
	24A521816	Choke, hash (1L5TCA-12)	.35
LS-1	50C532450	Speaker, PM: 5 x 7"; 3.2 ohm VC	5.50
Resistors - Note:		All resistors are insulated carbon type unless otherwise specified	
R-1	6R6032	470,000 20% 1/2W	.10
R-2	6R6010	330 20% 1/2W	.10
R-3	6R6477	15,000 10% 1/2W	.10
R-4	6R6012	33,000 20% 1/2W	.10
R-5	6R5690	6800 10% 2W	.25
R-6	6R3992	150 20% 1/2W (1L5TCA)	.10
	6R6010	330 20% 1/2W (1L5TCA-12)	.10
R-7	6R6004	1 meg 20% 1/2W	.10
R-8	18K535758	Dual Control & Switch: vol 250,000, tap at 125,000; tone 1 meg	2.00
R-9	6R3927	2.2 meg 20% 1/2W	.10
R-10	6R2119	15,000 20% 1/2W	.10
R-11	6R6004	1 meg 20% 1/2W	.10
R-12	6R6015	220,000 20% 1/2W	.10
R-13	-	-	-
R-14	6R5614	56 10% 1/2W (1L5TCA)	.10
	6R6389	220 10% 1W (1L5TCA-12)	.20
R-15	6R5614	56 10% 1/2W (1L5TCA)	.10
	6R6389	220 10% 1W (1L5TCA-12)	.20
R-16	-	-	-
R-17	6R6015	220,000 20% 1/2W	.10
R-18	6R6336	270 10% 1W	.20
R-19	6R476130	2200 20% 2W	.25
R-20	6R2009	22 10% 2W (1L5TCA-12 only)	.25
SP-1,2	64K531672	Spark Plate	.05
T-1	24C485553	Trans, 1st IF: 455 Kc	1.45
T-2	24K485555	Trans, 2nd IF: 455 Kc	1.70
T-3	25B500727	Trans, output	2.40
T-4	25C472533	Trans, power (1L5TCA)	5.15
	25C530737	Trans, power (1L5TCA-12)	5.40
TUNER - MODEL AT-90			
	51D502000	Tuner, Model AT-90 (See AT-90 Service Manual)	18.15
MECHANICAL PARTS			
	9K513490	"A" Lead & Fuse Recept (1L5TCA)	.30
	9K530763	"A" Lead & Fuse Recept (1L5TCA-12)	.30
	7B513475	Bracket, dial background	.45
	7A513471	Bracket, dial scale retaining	.45
	43A513478	Bushing, mtg	.25
	1V513535	Button, push	.25
	42B500725	Clip, bottom cover retaining	.05
	42B485548	Clip, coil can mtg	.01
	42A501478	Clip, spring (pushbutton ret)	.02
	42A4215	Clip, vibrator grounding	.10
	15C500666	Cover, bottom	.70
	15C500663	Cover, top	1.20
	13C513450	Escutcheon, dial	2.70
	13D532101	Grille, speaker	2.95
	36B521995	Knob, control: incl setscrew	1.10
	36K592304	Knob, disc (dummy knob)	.50
	36B473538	Knob, disc (tone)	.45
	4S7668	Lockwasher, ext: 3/8" (vol & tuning mtg)	.01
	2S7087	Nut, speed: 3/32" rnd (dial scale ret)	.01
	29A76280	Pin, terminal: blk (spkr lead)	.05
	29K76282	Pin, terminal: wht (spkr lead)	.03
	1V513534	Pointer and Sleeve Assem	.15
	9A472148	Receptacle, antenna	.25
	34B513474	Scale, dial	.30
	64K532334	Screen, spkr	.75
	3S7104	Setscrew: 8-32 x 3/16" (control knob)	.02
	51B513465	Shaft & Bushing Assem (manual)	1.40
	51A520230	Shaft & Drive Disc Assem	.80
	9A500709	Socket, pilot light	.15
	9R119819	Socket, tube: 7 pin min; with dummy lug	.15
	9A70208	Socket, vibrator: 4 pin	.20
	41A51096	Spring, disc knob (between cont & disc knob)	.01
	2A912119	Wingnut (spkr mtg)	.01
	39K470032	Wiper, ground (bottom cover)	.05
	39K502418	Wiper, ground (vibrator socket)	.05
MOUNTING PARTS & ACCESSORIES			
	7B513468	Bracket, receiver support	.30
	1V532482	Kit, accessories (includes items listed below)	2.55
	1A473588	Adaptor, right angle (for ant lead)	1.00
	7A472857	Bracket, receiver mtg (mtgs on rear)	.10
	8A4491	Capacitor, generator	.85
	2S115629	Locknut: 5/16-24 x 1/2 x 7/32	.05
	4S7653	Lockwasher: int-ext; 5/16" (support brkt mtg to car)	.03
	4S7693	Lockwasher: split; 1/4 (support brkt mtg to right angle brkt)	.01
	2S7022	Nut, hex: 1/4-20 x 7/16	.02
	2S2869	Nut, hex: 7/16-28 x 9/16 x 1/8	.05
	3S122021	Screw, machine: 8-32 x 9/16 chrome plated	.02
	3S115584	Screw, machine: 5/16-24 x 1	.05
	3S7297	Screw, machine: 1/4-20 x 1/2	.04
	3S7454	Screw, tapping: #8 x 1/4 (mounts receiver brkt to receiver)	.01
	3A521612	Screw, tapping: #10 x 1/2 chrome plated	.04
	6A4141	Suppressor (distributor lead)	.30
	4S1730	Washer, flat: 3/4 x .453 x .04 (receiver mtg to instrument panel on control shaft)	.01
	4S8205	Washer, flat: 9/16 x 17/64 x .048 (support brkt mtg to receiver brkt)	.01

PRICES SUBJECT TO CHANGE WITHOUT NOTICE